

R marks/Arguments

Claims 28 to 55 are pending. Claims 45 and 55 have been amended to correct error.

Claim 55 has been objected to because of the following informalities: "coextruded0coated" in line 4 from the bottom seems to be incorrect. This matter has been corrected.

This objection should be withdrawn.

The amendment filed on November 26, 2002 stands objected to under 35 U.S.C. 132 as introducing new matter into the disclosure for the reasons of record as set forth in Paragraph No. 5 of the Office Action mailed on February 13, 2003 (Paper No. 5). Applicants traverse this rejection and statement.

Paragraph No. 5 of the 2/13/2003 Office Action states:

"5. Claims 28-54 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, has possession of the claimed invention. A recitation 'the temperature at the surface of the plastic coating (14) and the adhesion-promoting agent (16) lies *below* the crystalline melt point (Tk) of the plastic' in independent claim 28 is a new matter since it was not described in the specification as filed."

Such paragraph no. 5 only sets out conclusions, not the reasons and facts required to support such conclusions and the assertion of new matter.

Paragraph no. 1 involving the new matter objection suffers the same defects of only setting out conclusions without the required supporting reasons and facts. Accordingly this objection is fatally defective.

The Examiner has the burden of proof to factually establish in the record that the matter under discussion is new matter. However, the Examiner has not carried her burden of proof, so his objection fails and should be withdrawn.

Applicants earlier showed in the record by fact, reason, etc., that no new matter was involved. Such showing is repeated below. The Examiner has not expressly addressed or submitted such showing.

Referring to applicants' Figure 1, the distance between the outer end of the nozzle of extruder 12 and the nip region of rollers 20, 22 is small. The result of this short distance is that the reduction in temperature of melted coextrudate 14, 16 is minimal. The melted coextrudate 14, 16 and the aluminum foil met going into the nip region and are in the nip region for an instance. However, the temperature of the melted coextrudate essentially instantaneously drops to the extent that the temperature of the outer surface of the extrudate is less than the crystallite melt point of the polyolefin 14. This is so because, if the outer surface of the olefin was at or above such melt temperature, the pressure from the two rollers would squish and disrupt or force away at least the outer portion of the coextrudate. The temperature of the aluminum foil, before and after contact with the melted coextrudate, is below the crystallite melt point of polyolefin 14. He language objected to by the Examiner is supported by the disclosure, scientific/technical principles, and the knowledge of one skilled in the art as to

what would happen in the first step of applicants' claimed process as a result of the apparatus and its arrangement shown in Figure 1, for example.

Furthermore, the claim language objected to in the 2/13/2003 Office Action was subsequently modified by applicants to recite the outer surface of the plastic (14). The present Office Action has not addressed the modified claim and specification language.

This objection should be withdrawn.

Claims 28 to 55 have been rejected under 35 U.S.C. 112, first paragraph. As containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants traverse this rejection.

The Office Action stated that the recitation "the temperature at the surface of the plastic coating (14) and the adhesion-promoting agent (16) lies *below* the crystallite melt point (Tk) of the plastic" in independent Claim 28 is a new matter since it was not described in the specification as filed. Applicants traverse this statement for the above and following reasons. Applicants coextrude the polyolefin (i.e., polypropylene or polyethylene) and the adhesion-promotion agent. The melted materials exit the coextruder nozzle. The coextrudate is still very hot for a substantial time after exiting the nozzle. These are inherent features of applicants' coextrusion, and the Examiner has not factually established otherwise in the record.

When the very hot coextrudate is combined with the aluminum foil, the temperature of the aluminum has to be low enough so that the outer surface of the polyolefinic portion of the coextrudate stays below the crystallite melt point (T_K) of the olefin. The coextrudate is combined with the aluminum foil between two rollers. The aluminum foil acts as a heat sink re the coextrudate – this is inherent – thereby maintaining the temperature of the outer surface of the plastic coating below the crystallite melt point (T_K) of the olefinic plastic.

Claims 28, 29, 51, 52 are rejected under 35 U.S.C. 102(b) as anticipated by Heyes et al. (U.S. Patent No. 5,093,208) for the reasons of record as set forth in Paragraph No. 9 of the Office Action mailed on February 13, 2003 (Paper No. 9) since Claim 55 is a substantial duplicate of Claim 28. Applicants traverse this rejection. Claim 55 is not a substantial duplicate of Claim 28, and the Examiner has not factually shown otherwise in the record. Claim 55 uses the phrase “consisting of” whereas Claim 28 uses the phrase “comprising.”

Applicants coextrude the polyolefin (i.e., polypropylene or polyethylene) and the adhesion-promotion agent. The melted materials exit the coextruder nozzle. The coextrudate is still very hot for a substantial time after exiting the nozzle. These are inherent features of the coextrusion in applicants' process.

When the very hot coextrudate is combined with the aluminum foil, the temperature of the aluminum has to be low enough so that the outer surface of the polyolefinic portion of the coextrudate stays below the crystallite melt point (T_K) of the olefin. The coextrudate is combined with the aluminum foil between two rollers. The aluminum foil acts as a heat sink re the coextrudate – this is

inherent – thereby maintaining the temperature of the outer surface of the plastic coating below the crystallite melt point (T_K) of the olefinic plastic.

Nowhere does Heyes et al. teach or suggest using the aluminum foil as a heat sink. Heyes et al. teaches preheating the aluminum foil to above or near the melting point of the polyester - that then results in raising (not lowering) the temperature of the cooler polyester coating. Figures 1 and 2 show the polyester in rolls at room temperature. Heyes et al. uses the heated aluminum as a heat source. Heyes et al. does not anticipate any of applicants' process claims.

The invention of Heyes et al. is limited to using extrudates or coextrudates of polyester or polyesters. On this ground alone Heyes et al. does not anticipate any of applicants' process claims.

Heyes et al. discloses that polyolefin coatings on metal sheet (aluminum foil) are unsatisfactory for the manufacture of drawn and wall-ironed cans (DWI cans). Examples 11 and 12 of Heyes et al. are comparative examples of prior art to the Heyes et al. invention. Examples 11 and 12 use laminate types H and I, respectively, that each has coextruded polypropylene composite film on both sides of the aluminum sheet. (The laminates of both Examples 11 and 12 are stated to exhibit poor formability and to give metal failure in can forming.) Examples 11 and 12 of Heyes et al. use the Heyes et al. method of laminate formation that includes using "preheating the metal strips" and then passing the coextruded polyolefin composite films and the preheated metal strips into a pair of nip rolls. Accordingly, Examples 11 and 12 of Heyes et al. do not anticipate any of the applicants' process claims.

No where does Heyes et al. teach the use of aluminum sheet that has a temperature lower than the coextruded polyester film. Heyes et al. generically discloses laminating the coextruded polyester film to the metal sheet but such disclosure is not anticipatory because it does not teach all of the requirements and limitations of applicants' process claims. Heyes et al.'s generic disclosure is not a teaching of a process step where the relatively cool temperature of the aluminum foil causes the outer surface of the hot polyolefin to stay below its crystalline melt point (T_K). Heyes et al. states:

"The laminated metal sheet of the invention is prepared by a process which comprises adhering directly to one or both major surfaces of the metal sheet a film comprising a polyester, the lamination conditions being such that during lamination the polyester film or films in the metal/polymer laminate is or are converted into non-crystalline or amorphous form." [Col. 3, lines 33 to 39]

The only specific schemes of Heyes et al. are ones which use preheating of the aluminum sheet. The preheating is not identified by Heyes et al. as being the preferred feature of the two preferred process – each of the two preferred processes of Heyes et al. involve all of such process, not part thereof.

Heyes et al. states:

"In one preferred process of preparing the metal polymer laminates in accordance with the invention polyester monolayer film or films are adhered to the metal sheet by heating the metal sheet to a temperature (T_1) above the melting point of the polyester films, the temperature (T_1)

being such that during lamination of the polyester films to the metal sheet,
the outer surfaces of the polyester films remain below their melting points,

*** ”

“In an alternative preferred process, the polyester film or films are
composite films (A) comprising an inner layer (A1) and an outer layer (A2),
and the composite polyester films are simultaneously adhered to the metal
sheet by a process which comprises

(1) heating the metal sheet to a temperature (T1) above the softening
point of the polyester inner layer (A1) but below the melting point of the
outer layer (A2), ***,” [Emphasis supplied] [Col. 3, lines 40 to 62]

In the disclosure of Heyes et al. that deals specifically with the
temperature of the coextruded plastic coatings, the coextruded plastic materials
are at a temperature less than the preheated metal (aluminum) sheet. Heyes et
al. states:

“Polymer/metal/polymer laminates were prepared by a lamination
process performed in apparatus as illustrated schematically in FIG. 1 or
FIG. 2 of the accompanying drawings. A metal sheet M was pre-heated
by infrared or induction heating to an appropriate temperature T_1 by a
heater 1. Temperature T_1 is usually within the range 140° and 350°C.
Polyester films A and B were fed from feed rolls 2 and 4 and laminated to
the opposite sides of the pre-heated metal sheet between lamination rolls
6, 8, ***.” [Emphasis supplied] [Col. 6, line 65, to Col. 7, line 5]

Figures 1 and 2 of Heyes et al. do not show any preheating of polyester films A and B, either rolled up or being fed to lamination rolls 6, 8. Since Heyes et al. does not recite any temperature for polyester films A and B before the lamination steps (rollers 6, 8), in accordance with scientific/technical practice, polyester films A and B were at room temperature.

Heyes et al. only discloses generically adhering a polyester to a metal sheet, without any reference to the temperature of either, or specifically adhering a polyester (or polyolefin) film to a metal sheet that has been preheated, with specific disclosure showing that the polyester film is at room temperature (that is below the preheating temperature of the metal sheet). Heyes et al. is not an anticipatory reference.

The Office Action stated that it is the Examiner's position that the surface area of the cooled PP layer has claimed properties such that if the quenched non-crystalline plastic still has small amounts of crystals, then the crystal grains are as small as possible *inherently* since it is produced by a method identical or substantially identical processes to that of claimed invention. Applicants traverse this statement. The process of Heyes et al. and the process of the applicants' claims are not identical or substantially identified, as shown above. The difference between preheating the aluminum sheet and the coextruded polyolefin/adhesion-promotion agent results in substantial differences. The Examiner's assertion of Heyes et al. inherently achieving crystal grains as small as possible is faulty and lacks factual support.

Heyes et al. states:

“Examples 11 and 12 show that laminates formed from polypropylene materials of the type described in GB 2003415 exhibited poor formality. Such laminates were found to give metal failure can forming.” [Emphasis supplied] [Col. 9, lines 65 to 68]

Table II also recites poor formability for Examples 11 and 12.

So it is clear that Heyes et al. does not inherently achieve crystal grains as small as possible.

The feature of applicants' process of using hot coextruded polyolefin/adhesion-promotion agent and cooler aluminum foil helps provide different results. The hot/soft polyolefin/adhesion-promotion agent of applicants' process has more time in the nip region to effect elevated temperature adhesion to the aluminum foil than does the scheme of Heyes et al. wherein the plastic composite has to first be heated up by the preheated aluminum sheet during the very short time period involved in passing through the two laminated rollers. The Examiner's attempt to use the concept of inherency fails.

Applicants' process produces containers that have essentially no white breaks in the deformation area.

Applicants claim a one-step production process that substantially differs from the multi-step production process of Heyes et al. There are actual physical differences in the processes that are not ones “claimed in terms of function property or characteristics.” As shown above, the products of the two processes differ. The burden of proof has not shifted to applicants.

The Examiner has not factually established in the record that a prima facie showing of anticipation exists. The two processes are substantially different.

This rejection should be withdrawn.

Not only is applicants' claimed process not anticipated by Heyes et al., it is unobvious over Heyes et al. The Examiner, who has the burden of proof, has factually established neither anticipation nor obviousness.

Applicants' process includes the step of coextruding the plastic (PP or PE) and the adhesion-promotion agent. The oleofin plastic and the adhesion-promotion agent are melted in the extruder barrel. The New Encyclopedia Britannica, Macropaedia Volume 14, (1947), states:

“Extrusion. A major technique of the plastics industry, extrusion consists essentially of the melting and compression of plastic granules by the rotation of a screw conveyor in a long barrel to which heat and cold can be applied. The screw drives the plastic through a nozzle ***. *** so as to compress and generally homogenize the melting plastic. ***; it serves to complete the melting *** and *** pumping the molten plastic through the shaping nozzle.” [Emphasis supplied] [Page 519]

Upon exiting from the coextruder, applicants' process moves the coextrudate rapidly to the two-rollers, where it is combined with the aluminum foil as both begin to pass through the two rollers. The aluminum foil acts as a heat sink.

One of the very core purposes of Heyes et al. is to provide an invention that does not use polyolefin coatings, that avoids the problems caused by the

use of polyolefin coatings, and that provides advantages over polyolefin coatings.

Heyes et al. states:

"It is known to use steel or aluminum coated with polyolefin coatings as a stock preparing DWI cans. Such materials are described, for example, in U.S. Pat. No 4,096,815 and British Patent 2003415; as far as we are aware, such materials have not found commercial application."

"We have found that polyolefin coatings do not form as well as thermoplastic polyesters." [Emphasis supplied] [Column 1, lines 14 to 21]

"Such [substantially non-crystalline or amorphous thermoplastic polyester] coatings out-perform polyolefin coatings in DWI can forming, and retain better continuity and protection." [Emphasis supplied] [Column 1, lines 41 to 43]

Heyes et al. directs away from the use of polyolefin coatings and, hence, also directs away from applicants' claimed process.

As shown above, the prior art comparison Examples 11 and 12 of Heyes et al. (that combined polypropylene composite films and preheated aluminum sheet) provided "poor" formability and gave metal failure in can forming. One ordinarily skilled in the art is pointed away by Heyes et al. from the use of polypropylene coatings.

In the amendment (of August 28, 1991) in U.S.S.N. 07/642,566, upon which Heyes et al. issued, applicants submitted a copy of Koga et al., U.S. Patent No. 4,849,293, (and a copy of corresponding European Published European Patent Application 0262929) that had been cited in Heyes et al.'s

corresponding U.K. application (the Examiner initialed references on Form PTO-FB-A820). The amendment, regarding Koga et al., states:

“Two particular amorphous polyester compositions are described. A first composition comprises (A) a low crystalline modified polyolefin, (B) an amorphous polyester and (C) a silane coupling agent. A second amorphous polyester composition comprises (A), (B) and (C) together with (D) an inorganic filler. In both compositions (A) forms a ‘matrix phase’, and (B) forms ‘a domain phase.’ Composite laminates for damping materials are described (see Col. 6, lines 59 et seq. of ‘293). These include metal/polyester composite structures.”

“There appears to be no disclosure of a process for making a laminate of metal and non-crystalline polyester which includes a step of providing a sheet of metal and a film of biaxially-oriented polyester having a semi-crystalline structure. Furthermore, there does not appear to be two separate heating steps followed by a rapid quenching step to form a laminate of metal and non-crystalline polyester. Additionally, there appears it be no disclosure of a composite polyester film comprising an inner polyester layer and an outer polyester layer.”

“The matrix/domain phase composition of this document would be unlikely to be suitable in the manufacture of containers. If a polyolefin matrix phase were used in the manufacture of cans, it would not survive the drawing and wall ironing to which the laminates of the present

invention are subjected." [Emphasis supplied] [Page 5, line 12, to page 6, line 3]

During the prosecution of Heyes et al., Heyes et al. further directed away from polyolefin coatings and away from applicants' claimed process.

Claim 55 is rejected under 35 U.S.C. 102(b) as anticipated by Heyes et al. (U.S. Patent No. 5,093,208). Applicants traverse this rejection for the reasons stated above and below.

The Office Action stated that Heyes et al. discloses a process for production of an aluminum foil (see column 2, lines 15 to 24) coated with a (sealable and sterilizable) plastic based on polypropylene (PP) consisting of co-extruding the plastic with maleic anhydride (MAH) graft modified PP (an adhesion promoting agent) and combining co-extruded PP composite of Type I with the aluminum foil between two rollers (see Fig. 4; Table I, type H; column 3, lines 35; and column 8, lines 9 to 10), the temperature at the outer surface of the plastic lies below the (crystallite) melt point (T_k) of the plastic (see column 3, lines 25, 46 and 47), then passing continuously the coated aluminum foil through a heater 10 (oven) to increase the adhesion strength between the aluminum foil and the plastic coating (see Fig. 1; column 7, lines 12 to 16) with a temperature set so that the temperature at the outer surface of the plastic lies above the (crystallite) melt point (T_k) of the plastic (see column 3, lines 48 to 51) and quenching (cooling in a shock-like manner) the coated aluminum foil such that the crystallite plastic is converted non-crystalline or amorphous form (i.e., crystalline proportion at least in the surface area of the cooled PP layer is as small as possible) (see

column 1, lines 45 to 47; column 2, lines 1 to 15; and column 3, lines 39).

Applicants traverse this statement for the reasons given above under the Section 102 rejection. The Examiner's reasons and description of Heyes et al. are in error as shown above. For example, the use of Heyes et al. is limited to "thermoplastic polyesters" (column 1, lines 20 and 21). Comparative Examples 11 and 12 of Heyes et al. use coextruded polypropylene composite film in the Heyes et al. process to show that polyolefin provide unsatisfactory results, but such polyolefin comparative examples do not anticipate because they use the non-anticipating production process of Heyes et al.

The Office Action stated that it is the Examiner's position that the surface area of the cooled PP layer has claimed properties such that if the quenched non-crystalline plastic still has small amount of crystals, then the crystal grains are as small as possible *inherently* since it is produced by a method identical or substantially identical processes to that of claimed invention. Applicants traverse this statement as being in error for the reason given regarding the above Section 102 rejection. The process of Heyes et al. has not been factually shown in the record to be identical or substantially identical to applicants' claimed process. If the Examiner continues in his assertion, then he is requested to factually prove it by citing supporting literature or to submit his own declaration on the matter.

The Office Action stated: that it is held that where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, *claimed properties or functions are presumed to be inherent*; and see MPEP 2111.02, 2112.01, In re

Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicants and the prior art are the same, the applicants has the burden of showing that they are not," and In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). These decisions are not apropos or controlling because the involved processes are not identical or substantially identical. The Examiner still has the burden of proof and he has not carried it in the record.

This rejection should be withdrawn.

Claims 30 to 50, 53 and 54 have been rejected under 35 U.S.C. 103(a) as being unpatenable over Heyes et al. (U.S. Patent No. 5,093,208) in view of Takano et al. (US 5,837,360) for the reasons of record as set forth in Paragraph No. 11 of the Office Action mailed on February 13, 2003 (Paper No. 9).

Applicants traverse this rejection.

Applicants have shown above that Heyes et al. does not make any of applicants' claims obvious. Takano et al. does not cure the defects of Heyes et al. in the search for applicants' claimed invention. Heyes et al. also teaches not using polyolefin coatings aluminum foil (metal sheet) if drawn and wall ironed-cans are to be manufactured therefrom.

Takano et al. also directs one ordinarily skilled in the art away from applicants' claimed invention. In Takano et al., polypropylene and a modified polypropylene are melt-coextruded and laminated on at least one side of a preheated steel sheet, i.e., desirably preheated to a temperature of from 100°C to 160°C. Takano et al. asserts that any preheating below 100°C is

unsatisfactory because then the laminated entity would be below the minimum temperature for initiation of the subsequent quenching. Note also that Takano et al. does not disclose laminating by passing the films and sheet through a pair of rollers.

Levendusky et al., i.e., U.S. Patent No. 5,919,517 (cited by the Examiner) in its background-of-the-invention section, states:

“U.S. Pat. No. 5,093,208 to Heyes et al. discloses a method for forming a laminated metal sheet in which a precast thermoplastic polyester film is pressed against one or both surfaces of a metal sheet to adhere the film to the sheet in a pressed against one or both surfaces of a metal sheet to adhere the film to the sheet in a non-crystalline form. The uncoated sheet of metal is heated to a temperature above the melting point of the polyester film and the film is applied to the sheet under pressure to form a laminate material.” [Emphasis supplied] [Column 1, lines 29 to 37]

(Levendusky et al. is assigned to ALCOA.) The art views Heyes et al. as preheating the uncoated aluminum sheet to a temperature above the melting point of the polyester film. The Examiner’s attempt to stick Takano et al. into Heyes et al. would destroy the invention of Heyes et al.

The Examiner referred to Levendusky et al. Levendusky et al. applies extruded, continuous, molten polymer web to a heated metal strip. Levendusky et al. also directs away from applicants’ claimed invention.

The Office Action stated that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used any conventional cooling means including ice-cooled water, cooled gas, water spray, or partial looping over at least one cooled roller of a metal foil containing laminate shock-like cooling of a coated metal foil of Heyes et al. in view of Takano et al. since Takano et al. teaches that the shock-like cooling can be carried out by any known means provided that cooling conditions are satisfied. Applicants traverse this statement. One ordinarily skilled in the art would not have any motivation to insert Takano et al. into Heyes et al.

Heyes et al. discloses (i) a generic process and (ii) two preferred subgeneric/species processes. The two preferred subgeneric/species processes are each multi-stepped with one step thereof using a metal sheet preheated to above the melting point of the polyester film (i) or preheated to between above the softening point of the polyester inner layer and below the melting point of the outer layer (ii). Column 3, lines 40 to 45, of Heyes et al. does not mention PP - it only recites polyester. No where does Heyes et al. say it is preferred to laminate coextruded hot PP-based layers to a heated aluminum foil (this step is one step in a preferred multi-step process). Furthermore, Heyes et al. directs away from the use of PP because it provides poor results, etc.

Also, nowhere does Heyes et al. disclose the use of hot coextruded PP-based layers. Figures 1 and 2 show rolls of polyester film being used - there is no indication that they are other than at room temperature.

Takano et al. requires a steel sheet preheated between 100°C and 160°C. Takano et al. does not disclose the use of rollers for lamination.

Takano et al. states: "The temperature of the *** combination *** becomes nearly equal to the preheating temperature of the steel sheet immediately after the lamination ***." [Column 5, lines 36 to 40] Takano et al. does not use rollers so it is not relevant to Heyes et al.

Applicants achieve laminate in a very short time, that is, almost instantaneously in the very short distance of contact point/region between the two rollers. The melted coextrudate adheres to the aluminum foil, with apparently improved adherence, almost instantaneously, with its outer surface cooling below the crystallite melt point.

The two rejection references are not combinable in the search for applicants' claimed invention. Even if the two rejection references are combined the result is not applicants' claimed invention. The Examiner has not factually shown in the record a prima facie showing of obviousness.

This rejection should be withdrawn.

Reconsideration, reexamination and allowance of the claims are
requested.

Respectfully submitted,

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